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(51) INT CL<sup>5</sup>  
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(58) Field of search  
UK CL (Edition K) A3B  
INT CL<sup>5</sup> A43B

(54) Orthopaedic footwear

(57) Footwear comprises a shoe or boot and one of a plurality of different insoles. The insoles have compensating portions (9) attached in chosen positions to support a chosen part of the foot, such as the valgus, to prevent valgus drop for example. Thus, most foot problems can be compensated for by choosing one of the different insoles in combination with a suitable shoe or boot.

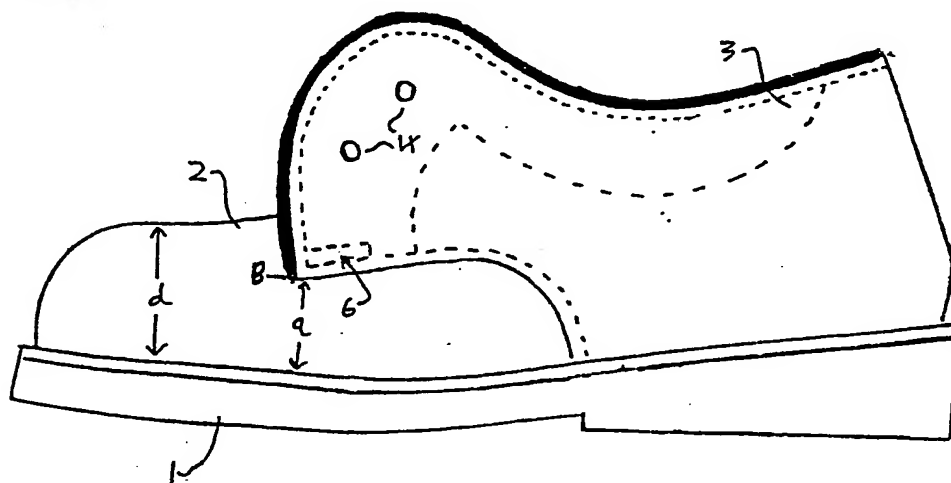


FIG 1

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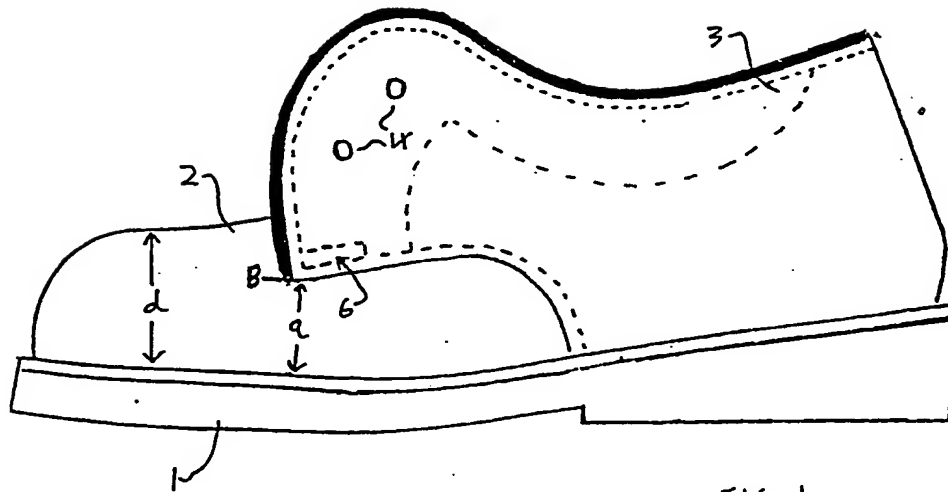


FIG 1

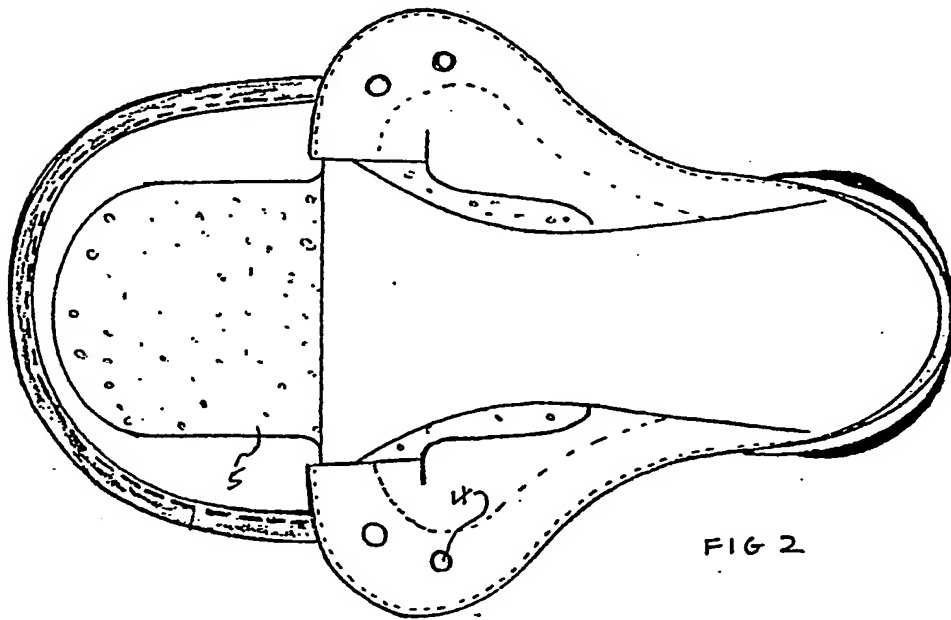


FIG 2

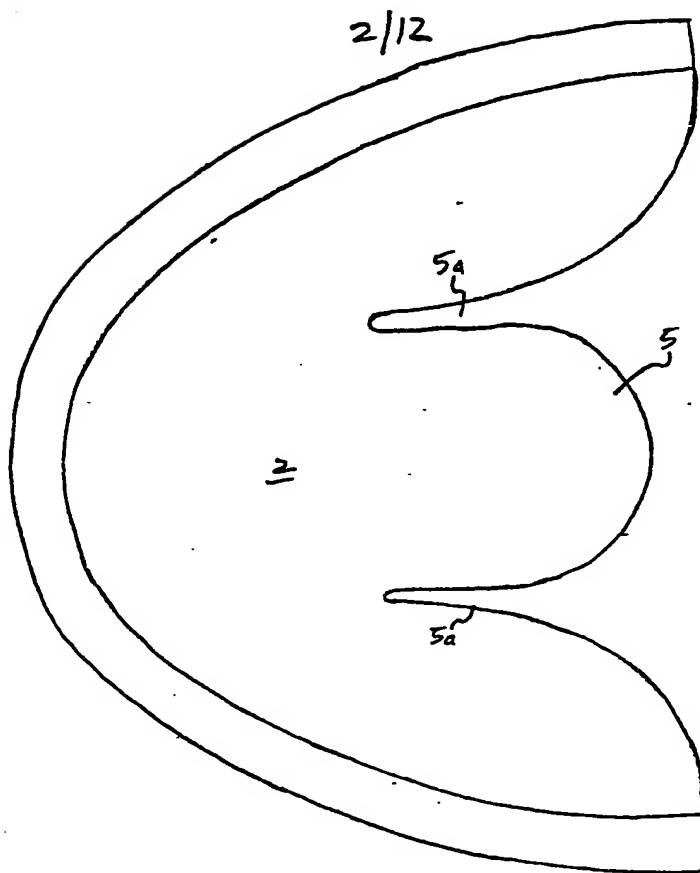


FIG 3

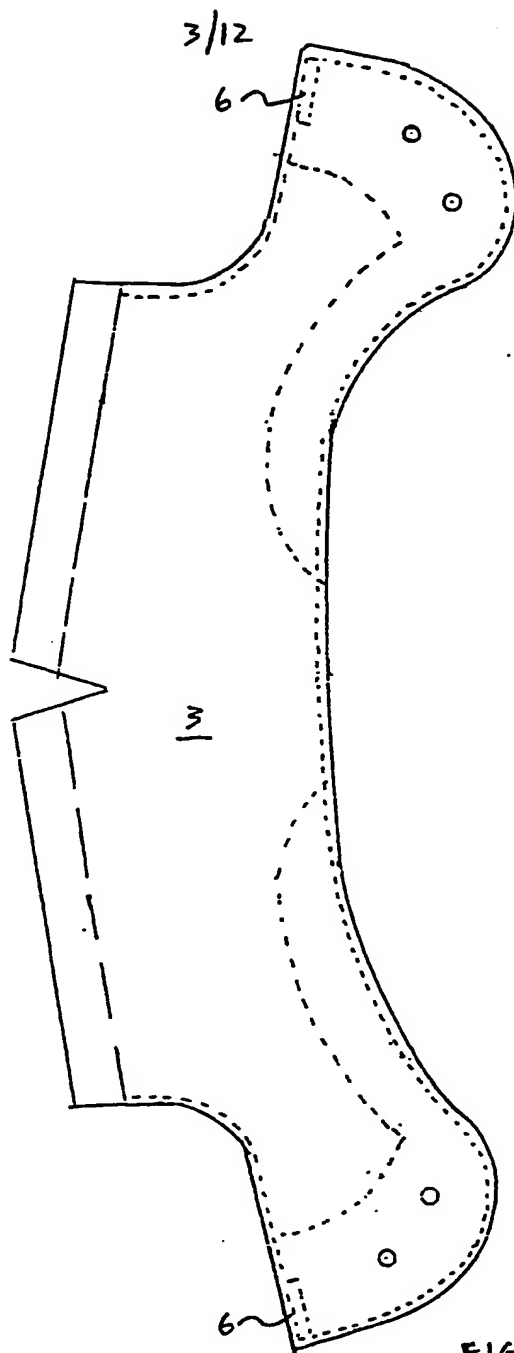


FIG 4

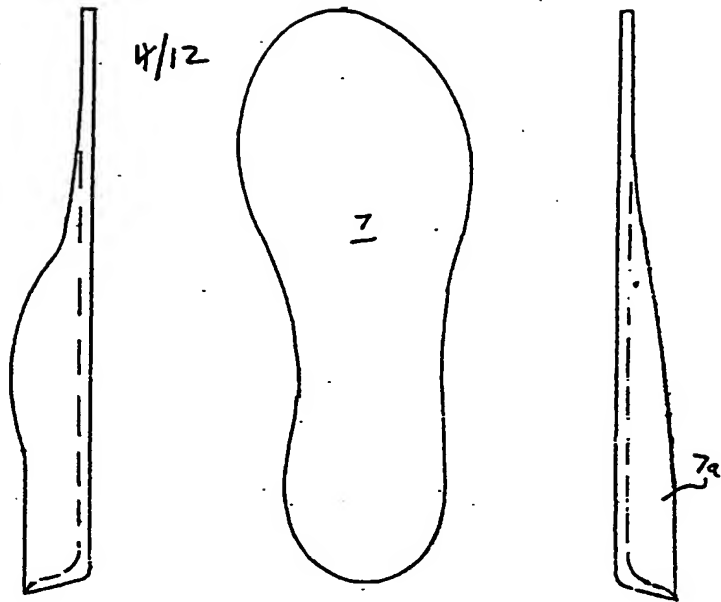


FIG 5

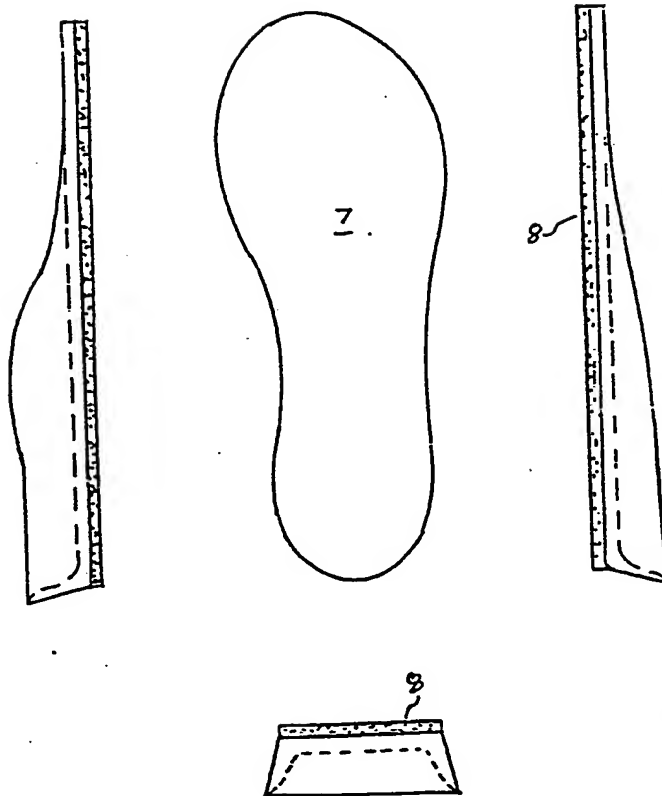
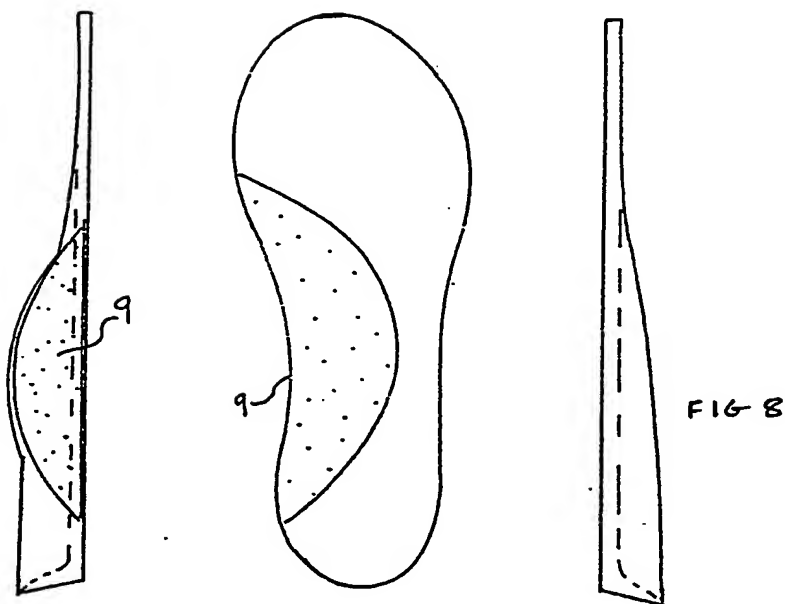
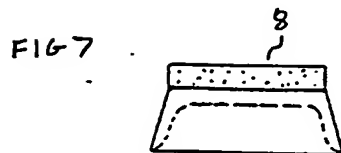
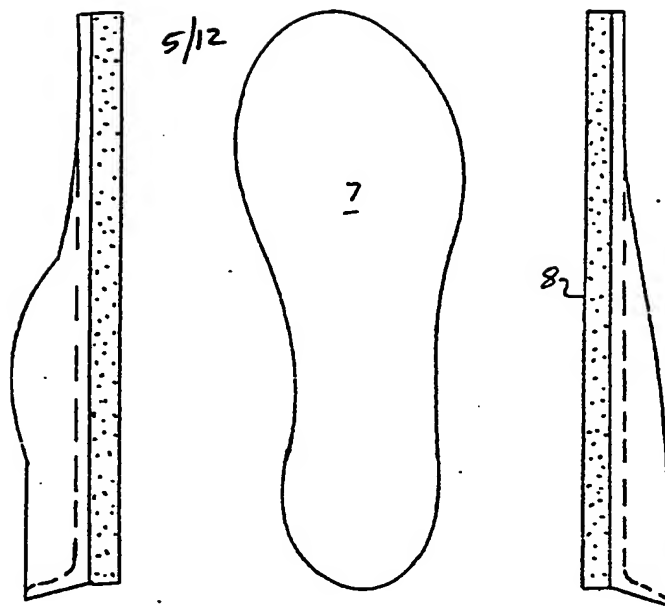


FIG 6



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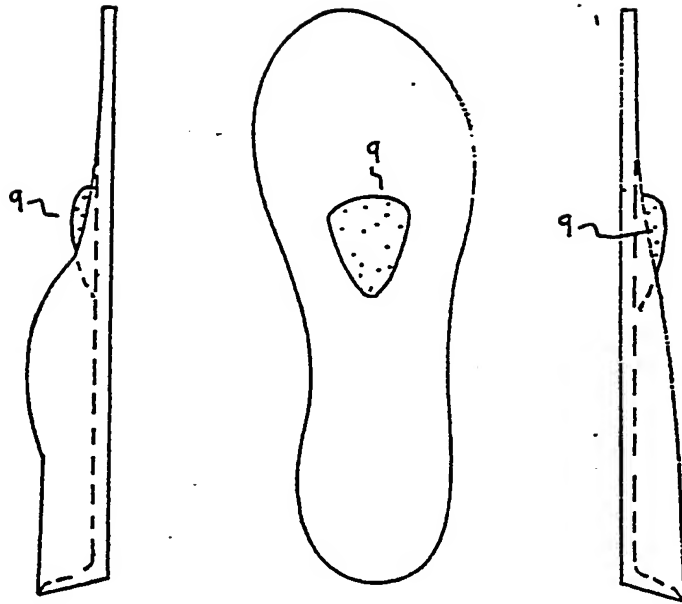


FIG 9

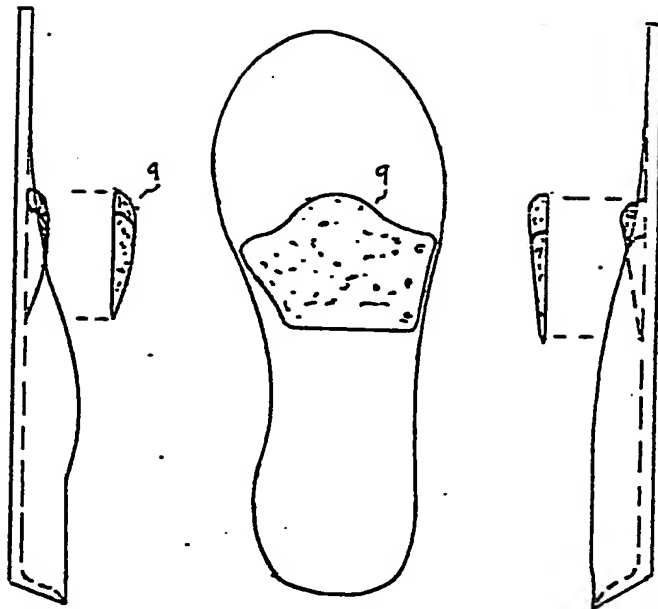


FIG 10

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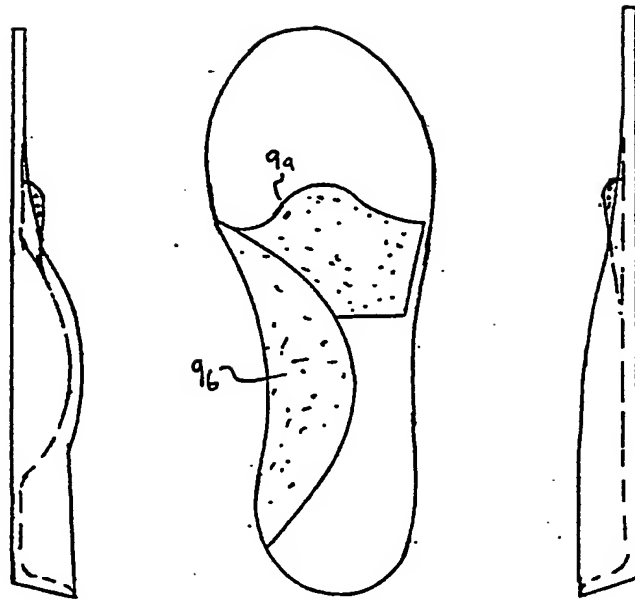
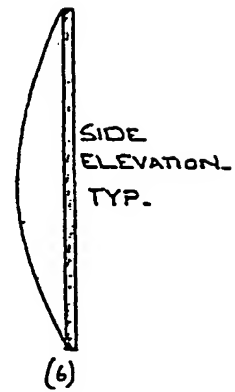
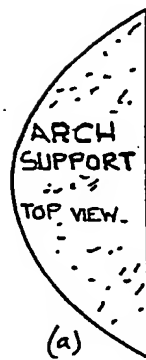


FIG 11





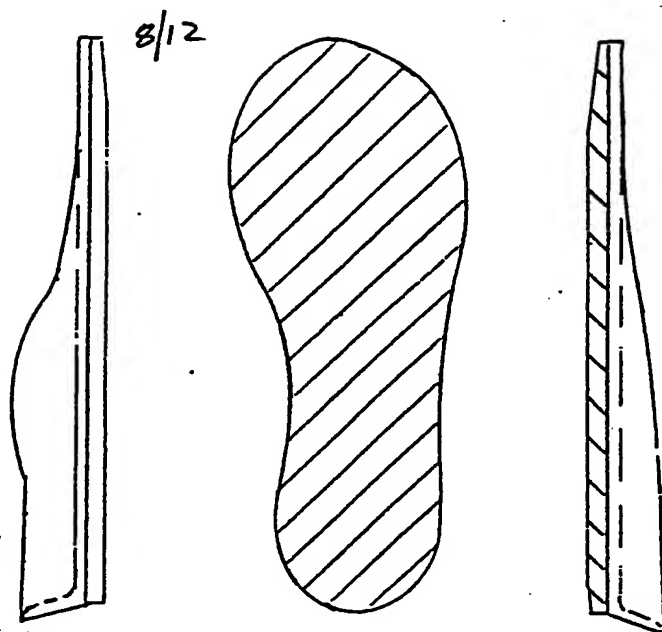


FIG 12

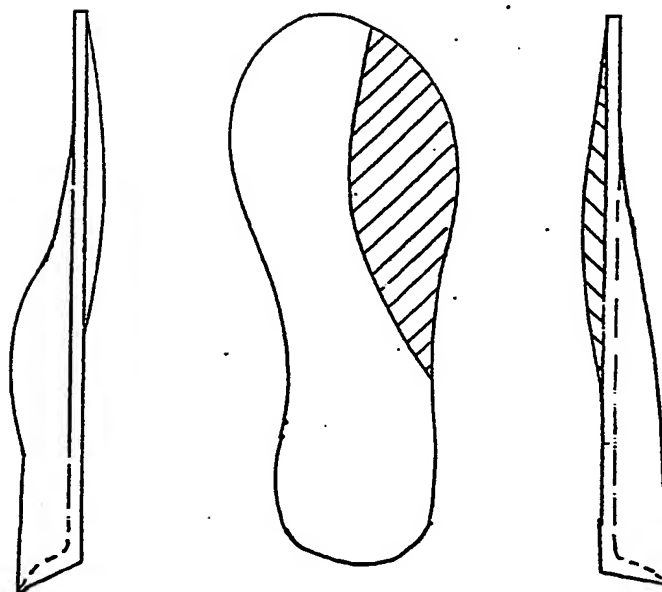
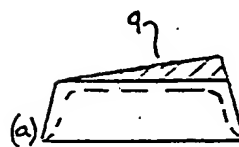


FIG 13

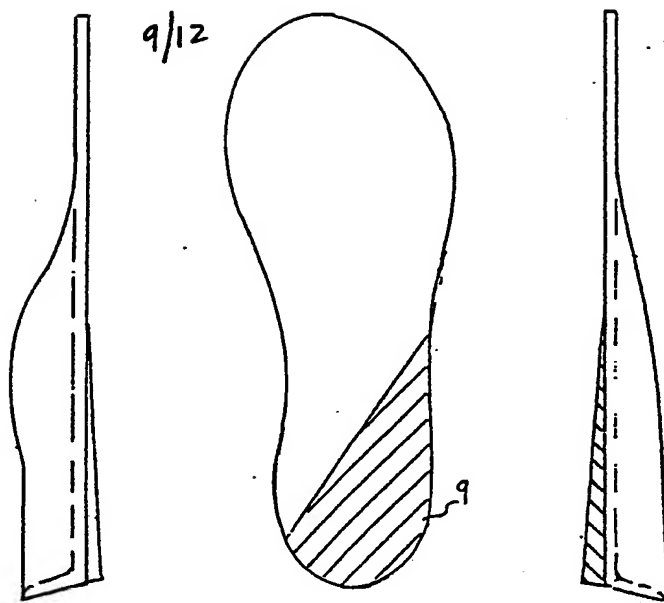
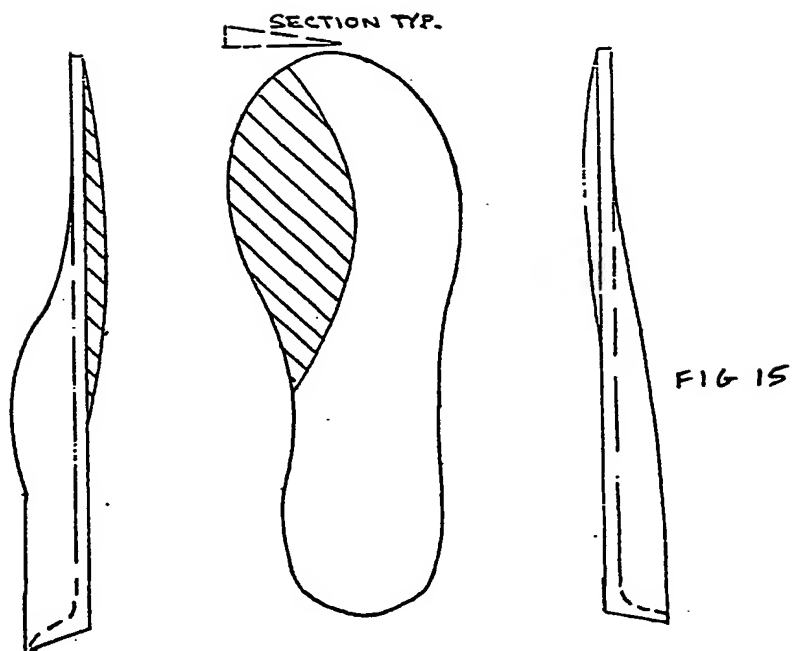
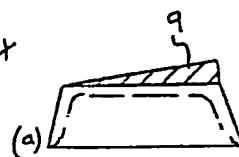


FIG 14



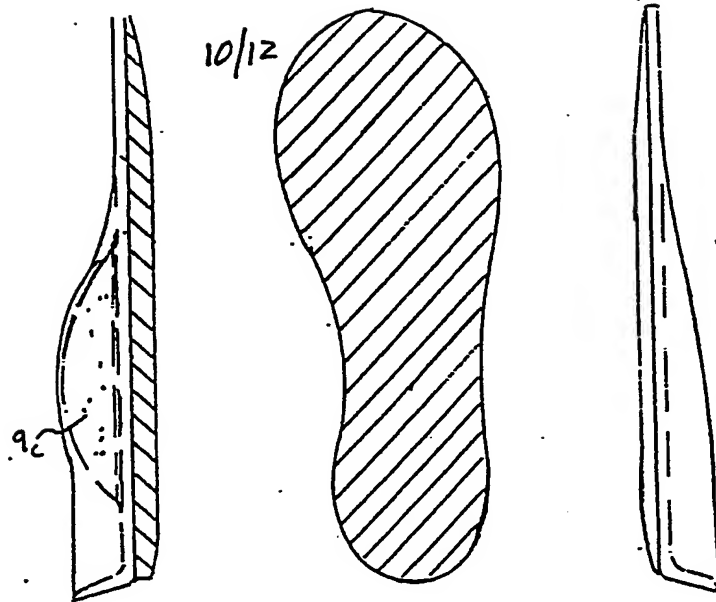


FIG 16.

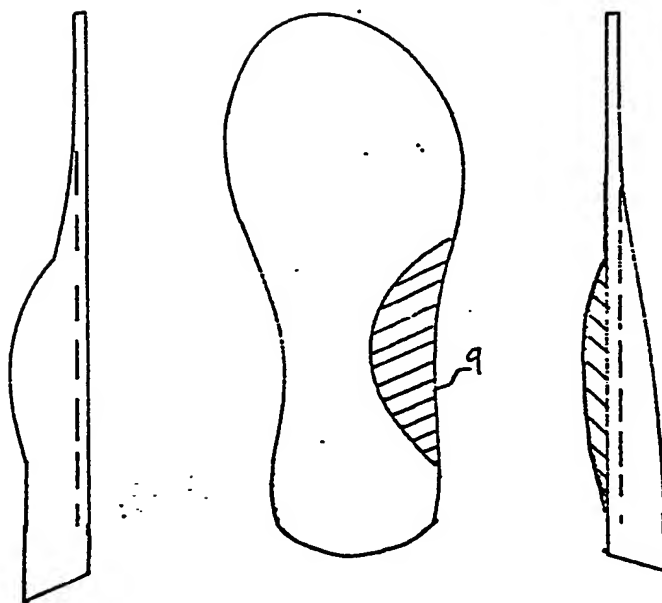


FIG 18

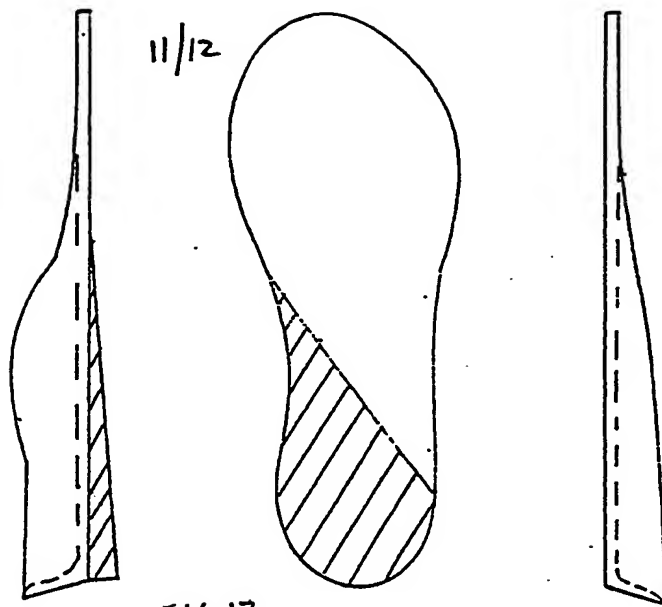


FIG 17

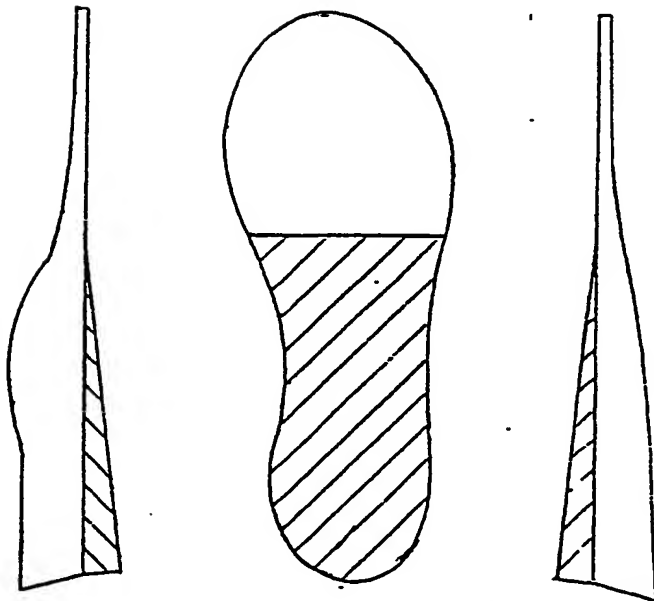
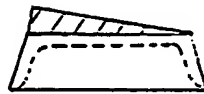
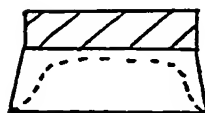
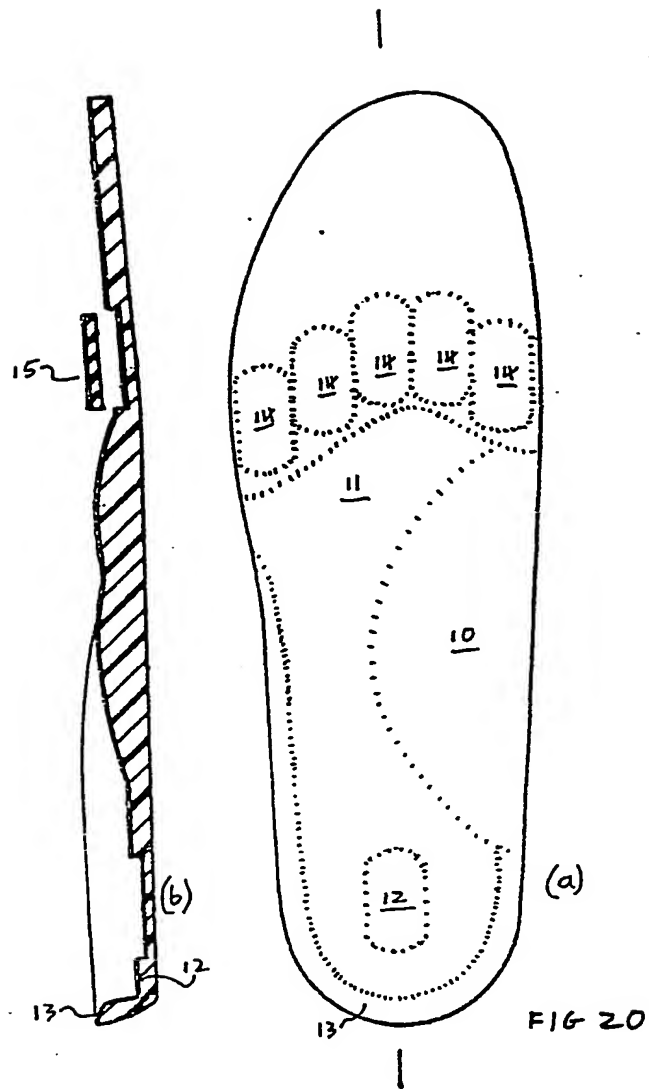


FIG 19



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ORTHOPAEDIC FOOTWEAR

This invention relates to orthopaedic footwear.

5 Orthopaedic footwear is often required for patients with particular foot problems, and is used for both adults and children. Such footwear can often be cumbersome to wear and is not aesthetically pleasing. With children and adults it is often desired to have orthopaedic footwear in the form of a shoe which appears, prima facie, like any other shoe so that the child does not feel 'different' from his peers. Orthopaedic problems are generally corrected by a specially designed shoe and/or a sole made individually to fit a particular patient. This can be expensive if one particular shoe is only intended for one patient.

10 According to the present invention there is provided orthopaedic footwear, comprising a shoe or a boot and one or more full-length insoles, the insole being shaped to fit inside the shoe and having means to correct a specified foot defect or ~~abnormality by raising or lowering~~ a chosen part of the foot with respect to the remainder of the foot when the foot is mounted upon the insole.

20 The correcting means may be mounted on the shoe-engaging surface of the insole. Removable or adhesive supports especially of the valgus or metatarsal type may alternatively or in addition be applied to the upper surface.

25 Preferably, the shoe or boot includes means to enable it to be opened to a greater extent than a conventional shoe to enable easy access for a foot. This means preferably comprises quarters attached as low as possible on the vamp, typically by a dropped-box peripheral veering, to enable a

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relatively broad and long tongue to be folded back onto the vamp.

According to the invention there is further provided a full length orthopaedic insole having means on its shoe-engaging surface to correct a specified abnormality by raising or lowering a chosen part of a foot supported by the sole. Preferably, the insole is substantially as illustrated in any one of Figures 5 to 20 of the accompanying drawings.

According to the present invention there is further provided a shoe or boot including a quarters portion and a vamp portion, the quarters portion being attached to an external part of the vamp portion, wherein the quarters is attached low on the vamp by a dropped-box peripheral veering.

Preferably, the vamp includes a broad, relatively long, tongue such that the shoe can be opened widely to allow access for a foot or insole.

In an adult shoe of UK size 8 the distance from the top of the outsole (the rand) to the box corner of the quarters is preferably no more than 1 inch. In a childrens shoe of UK size child 6 this maximum dimension is preferably  $\frac{3}{4}$  inch. Proportional dimensions are preferable for other size of shoe.

Embodiments of the invention will now be described by way of example only with reference to the accompanying diagrammatic drawings, in which:

Figure 1 shows a children's shoe;  
Figure 2 shows a top view of the shoe in an opened position;  
Figure 3 shows the vamp portion of the shoe;  
Figure 4 shows the quarters portion of the shoe;

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Figures 5 to 19 show alternative insoles for compensation for various abnormalities;

Figure 20(a) shows an insole to which compensations can be applied, and;

5 Figure 20(b) shows a cross-section through Figure 20.

Referring to Figures 1 and 2, a shoe which is suitable for the reception of orthopaedic insoles is designed primarily to have the appearance of a  
10 conventional shoe, such that an observer would not notice that the user requires orthopaedic footwear. Although a children's shoe is shown in the example, it will be appreciated that the invention extends to adults shoes. The shoe shown by way of example in  
15 Figure 1 is of a two hole Derbyette form. For an adult, the shoe may more typically be a 3 or 4 hole conventional Derby but these shoe types are interchangeable between children and adults. The invention is applicable to other types of shoes or  
20 boots which may use, for instance velcro or other non-lace fastening.

As shown in the Figures, the shoe comprises a sole 1, a deep vamp portion 2 for covering the front and top of the front of the foot, and a portion  
25 3 forming the quarters of the shoe which covers the side and rear portion of the foot. This quarters portion is designed to fit snugly around the ankle of the user, and includes four lace holes 4, two on either side at the front to enable the shoe to be  
30 secured in conventional manner. The quarters 3 are securely affixed and stitched to vamp portion 2. They are set low such that the bottom of the box quarter B is spaced from the top of sole 1 by a distance of typically  $1/2$  inch, but preferably no  
35 more than  $3/4$  inch. They are affixed by a dropped-



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box peripheral veering 6, in a manner known in the art. Vamp portion 2 as shown in Figure 3 includes a tongue 5 extending towards the heel of the shoe. Thus the vamp is divided into three portions, separated by slot portions 5a which serve to define tongue 5. The tongue is large and broad and may be half the length of the total vamp portion. This enables the tongue, as shown in the Figure, to be opened out to be folded back on the vamp. Thus the side portions of the quarters can be opened out widely once the laces have been removed. Hence a "whale mouth" effect is obtained when the shoe is opened out and a large space is revealed into which a foot or an insole may easily be inserted without damage or pain to a foot. After an insole and a foot is in place, the tongue 5 is laid over the top of the foot and the front portions of the quarters 3 are brought together and laced. Since the depth d of the shoe is large the shoe is capable of comfortably supporting not only a foot, which may require a considerable degree of protection and cushioning, but also one or more supporting insoles which may have orthopaedic compensation.

Figures 5 to 20 show possible insoles which can be inserted into the shoe of Figures 1 to 4 or into any other shoe. The Figures show an insole adapted for a left foot, both in a view from below, i.e from the shoe engaging surface, and in respective right and left elevations. The insoles may of course be of a size to fit within children's or adult's shoes of standard sizes or made specifically to fit a specific shoe and/or foot.

Figure 5 shows a standard insole which can be used with the shoe to provide cushioning and comfort for a foot. The insole is typically made of

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a resilient material and includes a raised edge 7a at the rear and heel to receive and support the heel of a foot.

5        Figure 6 shows a double thickness standard insole in which a cork or other block 8 is affixed to the underside of the resilient sole 7.

10       Figure 6(a) shows a back view of the double thickness sole and shows that the rear of the sole is of tapered cross-section tapering out from the lower cork portion 8.

Figure 7 shows a third standard sole, this time of triple thickness having a double thickness 8 of cork or other material on its base.

15       Figure 8 shows a sole designed to compensate for Valgus problems, i.e. those associated with the inner longitudinal arch region of the foot. A compensating portion 9 is applied to the portion of the sole which supports the valgus portion of the foot. The compensation portion 9 is raised with  
20       respect to the remainder of the sole to support that portion of the foot and prevent Valgus drop. It should be appreciated that any of the compensating soles in Figures 8 to 20 may be used with double or  
25       triple thickness soles such as shown in Figures 6 and 7 and in any combination. The extensions 8 may be made of cork, sponge, or other suitable resilient material.

30       Figure 9 shows an insole designed to compensate for dropped Metatarsal, that is the bone at the base of each toe. In this case, the reduced metatarsal form (dome), a generally triangular compensating portion 9 having rounded corners, is applied to the portion of the sole designed to contact the Metatarsals. A smaller, round, button,  
35       may alternatively be used.

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Figure 10 shows a sole having compensation across its width for Metatarsal problems along the entire foot. The compensating insert 9 in this case (a full transverse) extends across the width of insole and in a generally pentagonal shape having rounded corners.

Figure 11 shows an insole having a combination of compensations for both reduced Metatarsalgia and Valgus trouble. The insert in this case comprises two portions, a first portion 9a for compensating against transverse Metatarsal problems and an insert 9b for inner arch drop. The insert 9 may be one piece or may be comprised of two pieces 9a and 9b. Figures 11(a) and (b) show respective top views and side elevations of typical arch supports for supporting both the transverse and inner longitudinal arches.

Figures 12 to 14 show insoles for compensating against varying degrees of Supination, that is, outward rolling of the foot. Figure 12 shows a sole for compensating against Full Supination. The compensation in this case is of a wedge shaped compensation across the whole of the sole, which increases in thickness from left to right, i.e. from the inside to the outside of the foot as shown most clearly in Figure 8(a). The compensation portion 9 is typically made of cork.

Figure 13 shows a sole designed for Anti-Supination at the sole of the foot only and in this case the compensating portion is only on the front portion of the sole and on the outside of the foot.

Figure 14 shows a sole of compensating Supination at the heel only, and in this case the compensation 9 is in the rear portion of the sole and extending diagonally towards the outside of the

foot.

Figures 15 to 17 show insoles designed for the compensation of various types of Pronation, that is, inwards rolling of the foot, i.e. the opposite effect to Supernation. Accordingly the insoles can be seen as substantially introducing an equal and opposite effect to the equivalent "Supernation" insole. Figure 15 is for Anti-Pronation at the sole and comprises a compensation which is on the inside portion of the foot. Figure 16 shows a sole for compensating for Pronation across the whole foot and comprises a compensating layer 9 which increases from thin to thick across the width of the foot from the outside inwards, as opposed to the full Anti-Supernation sole shown in Figure 12 which increases from the inside to the outside. An arch support 9(c) may be included in this sole or any of the other soles where necessary. The arch support being mounted on the top surface of the sole. Figure 17 shows a sole for compensating against Pronation at the heel and comprises a tapering portion from outside to inside of the sole at the heel.

For mild Pronation an insole of the valgus type shown in Figure 8 may be appropriate instead of the Anti-Pronation ones. However, for more severe Pronation one of the insoles of Figures 15 to 17 are desirable.

Figure 18 shows a sole for compensating against Cuboid Drop, that is drop of the Cuboid bone at the outside of the centre of the foot. The compensation 9 comprises a generally semi-circular portion designed to fit on the outside portion of the sole as shown.

Figure 19 shows a sole for compensating against shortening of the leg, which compensation

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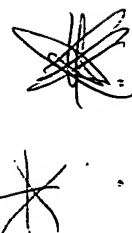
5 serves to raise the rear portion of the foot. The compensation, as shown in the Figure extends along the whole or part of the sole apart from the front section and increases in thickness from the front to the rear of the sole. This serves to lift the rear of foot up.

10 It should be appreciated that the compensation described with reference to the above Figures may be applied to standard insoles, perhaps by affixing compensations by glueing or other means to an insole. The whole insole can then be painted with a suitable paint to achieve a pleasing aesthetic affect. Alternatively, the insoles may be moulded or otherwise manufactured in pre-shaped form with the compensations already present.

15 Figure 20 shows a top view of one type of insole to which the compensations can be applied. The insole has one raised portion 10 for supporting the Valgus and a second raised portion 11 for supporting part of the foot just behind the Metatarsal area. A recess 12 is included in the heel portion, which portion has a raised edge 13. Five further recesses 14 lie on the Metatarsal region of the insole. Recesses 12 and 14 are elongate, and have arcuate ends, and may be filled by detachable plugs 15. By removing selected plugs, which can have an adhesive under-surface, a user can remove pressure from selected Metatarsals or the heel bone.

20 Compensations can be applied to the lower surface of an insole such as that of Figure 20. Alternatively, a standard insole having no recesses or just a heel recess, whether with or without a detachable plug, may be used. Other types of insoles may be used, where appropriate, with compensations applied.

35 The compensations may be detachable.



CLAIMS

1. Orthopaedic footwear, comprising a shoe or a boot and one or more full-length insoles, the insole being shaped to fit inside the shoe and having  
5 means to correct a specified foot defect or abnormality by raising or lowering a chosen part of the foot with respect to the remainder of the foot when the foot is mounted upon the insole.
2. Orthopaedic footwear as claimed in Claim 1  
10 wherein the correcting means is mounted on the shoe-engaging surface of the insole.
3. Orthopaedic footwear as claimed in Claim 1 or Claim 2 including one or more removable portions.
4. Orthopaedic footwear as claimed in Claim 3  
15 wherein the portions are applied to the upper, foot-engaging, surface.
5. Orthopaedic footwear as claimed in any one of Claims 1 to 4 wherein the shoe or boot includes quarters attached to a vamp portion such that the  
20 bottom of the quarter is less than or equal to  $\frac{3}{4}$  inch above the top of the sole of the shoe or boot.
6. A full length orthopaedic insole having means on its shoe-engaging surface to correct a  
25 specified abnormality by raising or lowering a chosen part of a foot supported by the sole.
7. An insole as claimed in Claim 6 substantially as hereinbefore described with reference to, and as illustrated by, any one of  
30 Figures 5 to 20 of the accompanying drawings.
8. A shoe or boot including a quarters portion and a vamp portion, the quarters portion being attached to an external part of the vamp portion, wherein the quarters is attached low on the vamp by a  
35 dropped-box peripheral veering.

9. A shoe or boot substantially as hereinbefore described with reference to, and as illustrated by Figures 1 to 4 of the accompanying drawings.